REMARKS

Claims 1-21 are in this application and are presented for consideration. Claim 15 has been amended.

The claims have been amended to address the Examiner's objections, and to place the application in better form. Applicant thanks the Examiner for the careful reading of this application, and for pointing out discrepancies.

Several claims have been rejected under 35 USC Section 112 first paragraph as containing subject matter which was not described in the specification. Some of these claims are rejected with regard to the structure of the inductive interface.

Applicant notes that an inductive interface is well known in the field of electrical engineering, and is also known by the term "inductive coupling". Electrical induction is a well-known phenomenon where an electric current generates a magnetic field, and/or how a magnetic field can generate an electric current.

When a current passes through a wire, a magnetic field is generated around the wire. When a wire is located in a changing magnetic field, an electric current is generated in the wire. Two of the most common types of inductive interfaces or couplings are electrical transformers, and radio transmitters with radio receivers.

In an electrical transformer there are two coils of wire which are physically electrically insulated from each other. An alternating current is passed through one of the coils (a primary

coil). This alternating current generates an alternating magnetic field around the primary coil. The other coil (a secondary coil) is arranged inside the changing magnetic field of the primary coil. This changing magnetic field generates a current in the secondary coil. In this way, the signal and/or energy passing through the primary coil is transferred to the secondary coil, even though both coils are physically spaced from each other and physically separated by electrical insulation. The two coils are inductively coupled, and the physical boundary between the two coils is an inductive interface.

In a radio transmitter and receiver contactless interface, the transmitter uses an antenna to generate a varying electromagnetic field which propagates through space. The receiver has an antenna which is affected by the electromagnetic field, and the receiver creates a signal depending on how the antenna is affected.

In the embodiment of the present drawings, an inductive interface of the electrical transformer type is shown. In particular, the inductive interface 5 is shown as having two parts, a sensor interface 51 and a tube interface 52. Each part is drawn using a schematic symbol commonly used for transformer type interfaces or couplings. The standard schematic symbol for a transformer is two coils shown on opposite sides of a single black line, or several black lines. Since a transformer type inductive interface is basically two halves of a transformer that can be brought into and out of proximity to each other, the common schematic symbol for such an interface is a transformer symbol split in half.

In the present invention, each of the parts of the inductive interface is designed as half of a transformer. When both parts, for example 51 and 52, are placed adjacent to each other

both parts combine to act as a single transformer transferring signals and/or energy from one part or coil, to the other part or coil. This transfer of signals and/or energy occurs inductively without the two wires of the interface being in direct and physical electrical contact. Applicant has found such an interface to be beneficial in breathing tubes because of the rigorous cleaning that such tubes undergo. This cleaning can cause direct and physical electrical contacts to deteriorate. Another benefit is that both the fluid connections and the electrical connections of a tube to a respirator can be made in one operation.

It is applicant's position that inductive interfaces or couplings are sufficiently well known to a person of ordinary skill in the art of electrical engineering, so that this person of ordinary skill would be able to use an inductive interface based on the description provided in the specification. Applicant notes that the courts have decided that a specification need not teach, and preferably omits, what is well known in the art (Hybritec Inc v. Monoclonal Antibodies Inc., 802 F.2d 1367, 231 USPQ 81, 94).

Applicant also notes that the present independent claims do not limit the contactless interfaces to be inductive interfaces, or even infrared interfaces. The inductive and infrared interfaces are preferred embodiments, however other contactless interfaces are possible, such as capacitive interfaces or couplings, as well as couplings based on visible light.

Other claims have been rejected under 35 USC Section 112 first paragraph with regard to the two wire line being designed to be a tube heater as well as a signal transmission line.

Designing an electrical wire to transmit both a signal, and to also perform a heating function is a simple and straightforward operation. It is common knowledge that many

electrical conductors have electrical resistance, and when a current passes through such electrical conductor, the resistance in combination with the current generates heat. Therefore designing a two wire line to be a tube heater as well as a signal transmission line requires that the resistance and current combination be varied so that a sufficient amount of heat is generated, and that there is sufficient signal strength at the end of the two wire line for the signal to be accurately recognized. Resistance values for different electrically conducting materials of various sizes are well known and available. Also the relationship between voltage, current and resistance is also well known to person of ordinary skill in the art of electrical engineering. In addition, determining the signal strength at the end of a two wire line is a straightforward calculation depending on the input signal strength and the resistance of the line. Therefore it is applicant's position that designing a wire to be both a tube heater as well as a signal transmission line is well within the skill of a person of ordinary skill in the art.

Claims 6 and 10 have also been rejected under 35 USC Section 112 first paragraph because it is not understood how supply voltage could be transmitted without an electrical connection or through the contactless interface. As described above, especially with regard to the embodiment of the drawings, the contactless interface can be comprised of a transformer type inductive interface or coupling. When the two parts of the interface are brought into proximity with each other, the two parts of the interface act as an electrical transformer which is well known in the art to move a supply voltage from one coil to the other, without a direct and physical electrical contact between the coils. Therefore it is applicant's position that claims 6 and 10 are supported by the present specification, especially to a person of ordinary

skill in the art.

Claims 4 and 14 have been rejected as being indefinite with regard to the acronym BUS. The acronym BUS is an abbreviation for Binary Unit System and stands for a standardized data transfer protocol. It is a generic term for different bidirectional data transfer protocols. The acronym BUS has been replaced in the claims with the term "data transfer". This rejection should now be overcome.

Claims 1 through 21 have been rejected as being obvious over Bahr '134 in view of O'Neill '843.

The rejection correctly states that Bahr does not disclose an infrared contactless interface between a signal line and a sensor means. The rejection then uses O'Neill to disclose an infrared contactless interface between a signal line and a sensor means. Applicant has reviewed O'Neill, and notes that the photo emitter 11 and the photo detector 13 as shown in figure 2 are not a contactless interface, especially not between a sensor means and a signal line. Instead elements 11 and 13 of O'Neill are an actual sensor by themselves. Elements 11 and 13 of O'Neill shine electromagnetic radiation through a chamber to sense the composition of gases in the chamber. These elements of O'Neill are therefore not a contactless interface between a sensor and a signal line, but instead are an actual sensor. Furthermore, applicant finds no incentive or motivation in the applied prior art that would lead a person to replace the electrical contacts of Bahr with the photo emitter and photo detector of O'Neill. O'Neill does not appear to indicate that the photo emitter and photo detector would be useful for replacing direct electrical contacts. Without some suggestion or motivation in the prior art to replace the

contacts of Bahr with the emitter and detector of O'Neill, the rejection is untenable. The rejection appears to state that the incentive for the combination would occur because it is well known in the art. It is applicant's position that this is insufficient for an obviousness rejection.

The present invention provides a breathing tube for a respirator which is simple in design, rugged in construction, easy to use, very durable and very reliable. It is applicant's position that the present invention is an improvement over prior art breathing tubes and therefore worthy of patent protection.

If the Examiner has any comments or suggestions which would further favorable prosecution of this application, the Examiner is invited to contact applicant's representative by telephone to discuss possible changes.

At this time applicant respectfully requests reconsideration of this application, and based on the above amendments and remarks, respectfully solicits allowance of this application.

Respectfully submitted
for Applicant,

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